XMSF Profiles

Information Technology
Transformation Through Technology

MOVES Open House
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24 August 2004

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An Employee-Owned Company

What Does XMSF "Look Like?"

A set of profiles rather than a single architecture

- A profile is a formal technical specification for interoperability of web based technologies in support of modeling and simulation
- A profile may define a new capability or define interoperability between two or more existing capabilities
- Point solutions may serve the immediate need, but don't support interoperability or design evolution

Profiles specifically include:

- Applicable web technologies and protocol standards, both existing and purpose specific
- Applicable data and metadata standards, both existing and purpose specific
- A tailoring of the set of selected standards, e.g. tailoring of authentication standards
- Recommendations and guidelines for implementation

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Develop profile definition including objectives

Develop profile conops

Identify candidate exemplar test cases

Survey profiles from other domains

Determine applicability of other profiles

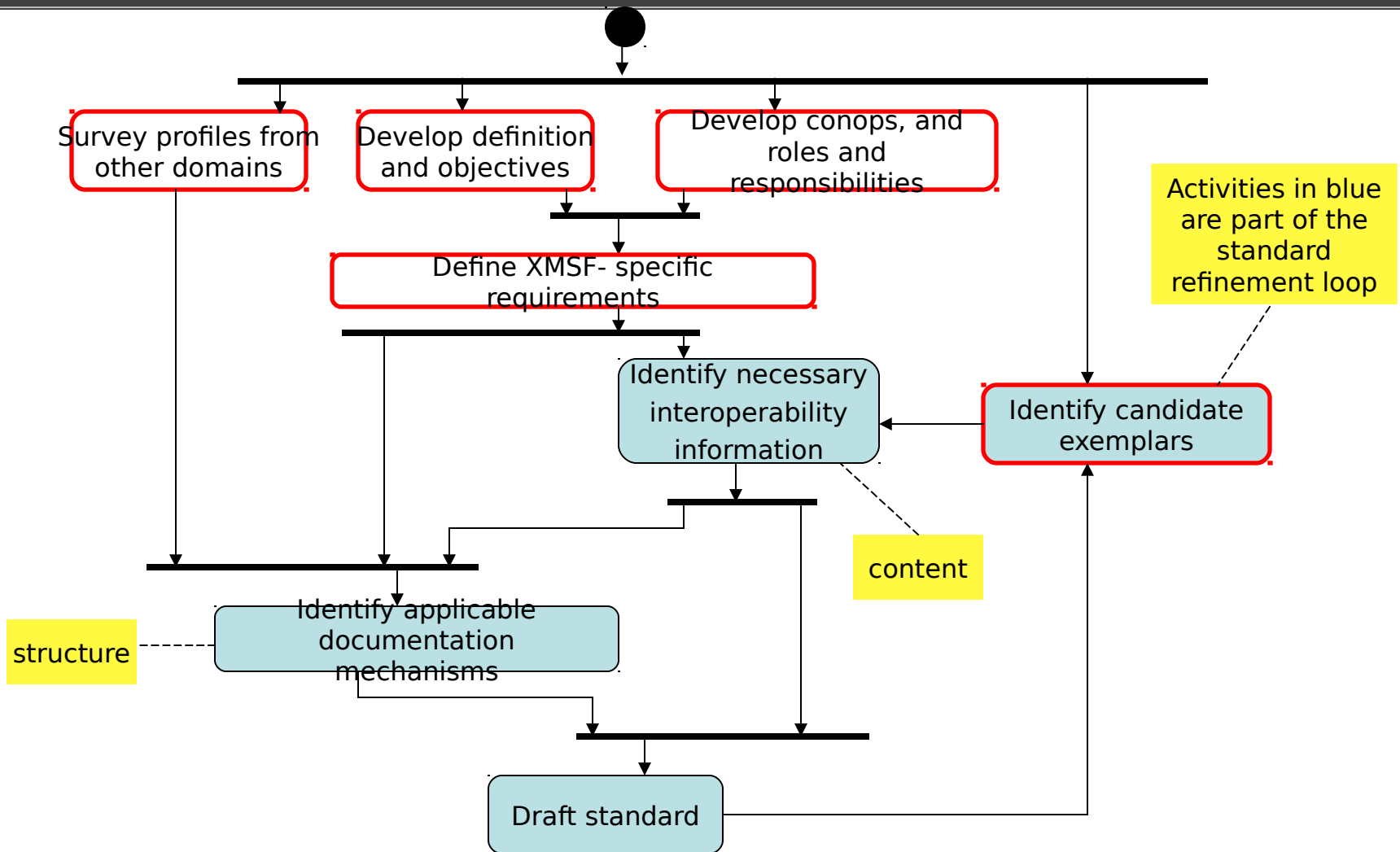Review exemplar test cases to identify necessary interoperability information

Identify XMSF-specific requirements

Identify applicable documentation mechanisms

Draft XMSF profile standard

Process Activity Diagram

Survey profiles from other domains

Develop definition and objectives

Develop conops, and roles and responsibilities

Define XMSF- specific requirements

Identify necessary interoperability information

Identify candidate exemplars

Activities in blue are part of the standard refinement loop

content

structure

Identify applicable documentation mechanisms

Draft standard

XMSF Profile Definition

XMSF profiles are formal technical specifications for application of interoperable web based technologies to enabling composable and reusable modeling and simulation, and facilitating enterprise integration. The objectives of XMSF profiles are to:

- Provide unambiguous specification of the functionality of components, and interfaces among components of the framework
- Ensure interoperability between existing and new web enabled technologies, both within M&S and in related domains
- Provide the necessary metadata to facilitate composability and reuse of components across multiple M&S application domains
- Facilitate development of new applications and services that are functionally interchangeable with existing applications and services
- Enable development of new applications and services that readily extend functionality for continuous evolution of capabilities

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Web Enabled RTI

XBML

BOMs

SRML

XML Schema-based Binary Compression (XSBC)

Terrain services

XML-based Tactical Chat (XTC)

3D model archive services

Other Organizations and their Profiles

W3C
- XHTML (Extensible HTML)
- SMIL (Synchronized Multimedia Integration Language)
- XHTML+SMIL
- Cascading Style Sheets Level 2 for mobile devices
- XHTML + MathML + SVG (Scalable Vector Graphics)
- WebCGM (Computer Graphics Metafile)
- P3P (Platform for Privacy Preferences) Assurance Signature

ECMA
- 232, 312, 345 Private Integrated Services Network (PISN)
- 327 ECMAScript (Javascript) 3rd Edition Compact Profile

ISO
- 9646 Open Systems Interconnection
  - Many standards under OSI
- 10608 Connection-mode Transport Service over Connectionless-mode Network Service
- 10609 Connection-mode Transport Service over connection-mode Network Service
- 10611 Message Handling Systems -- Common Messaging
- 10613 Relaying the Connectionless-mode Network Service
- 12067 Relaying the connection-mode Network Service
- 12071 Computer Graphics Metafile interchange format
- 14496 MPEG
- 15292 Security techniques

And the list goes on...

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Simulation/system users

- Provide feedback on usefulness and ease of use of simulation/system (developed in accordance with profile(s))
- Identify new simulation/system requirements

Simulation/system developers

- Develop/integrate new simulations/systems consistent with existing profiles
- Identify the need for new profiles
- Develop/integrate new simulations/systems without an existing profile
- Develop profiles for new simulations/systems
- Provide feedback to Profile Community/Working Group on effectiveness of profile standard
- Provide feedback to Profile Certifying Authority on accuracy of individual profiles

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Profile Conops Stakeholders

Profile Community/Working Group

- Develop profile standard

- Update profile standard based on experience of simulation/system developers

- Make recommendations to Profile Certifying Authority about certification processes and metrics

Profile Certifying Authority

- Maintain repository and CM of approved profiles

- Develop certification processes and metrics

- Assess individual profiles according to the profile standard, and certification processes and metrics

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Profile Conops Stakeholders
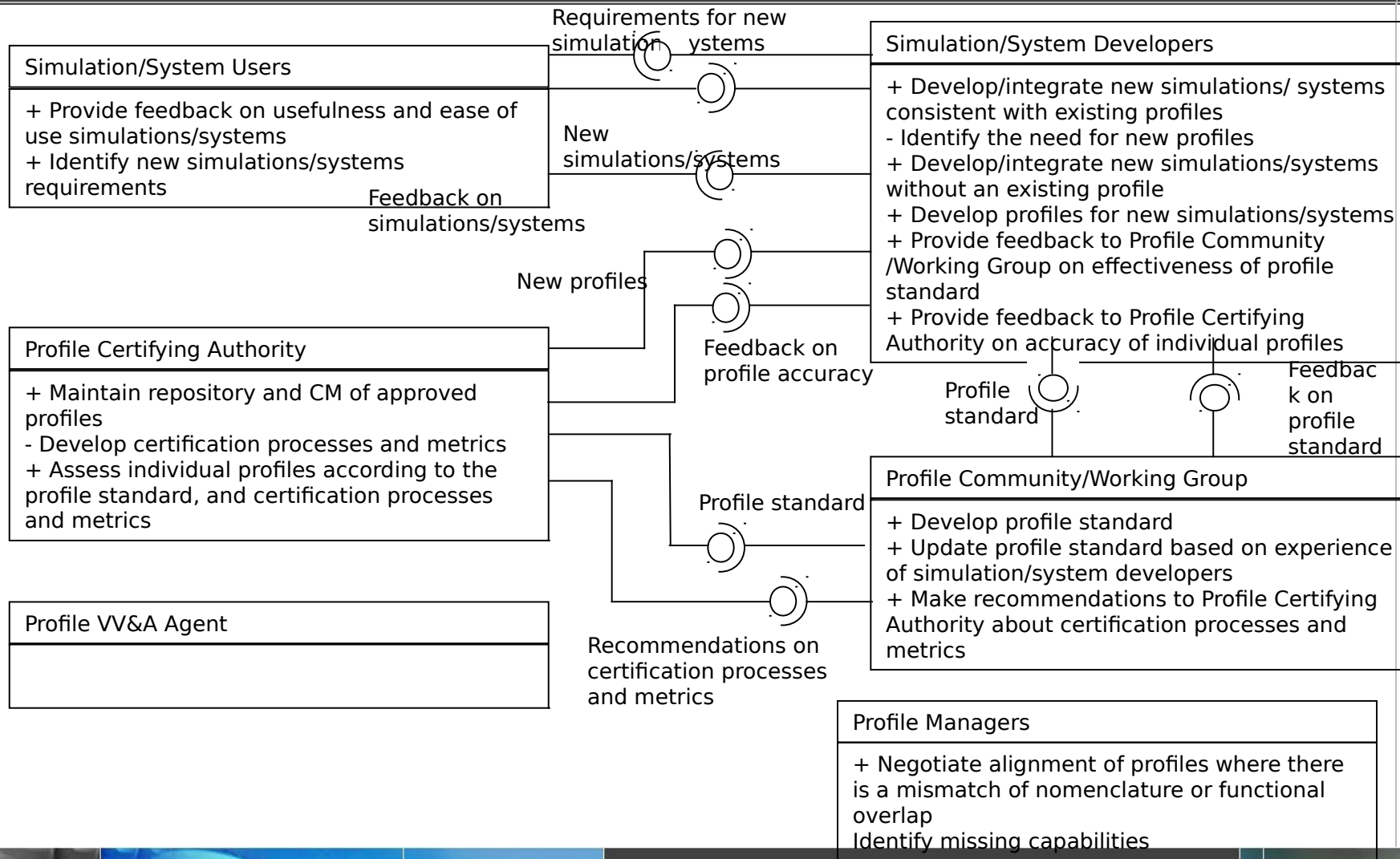
Profile Managers

- Negotiate alignment of profiles where there is a mismatch of nomenclature or functional overlap

- Identify alternative implementations of capabilities (should this responsibility fall to Simulation/System Developers?)

- Identify missing capabilities

- Recommend standard enhancements based on user needs (Does "standard enhancements" mean "profile enhancements" or "profile standard enhancements," i.e. are they recommending enhancements to the overarching profile standard, or to the profile of which they're the manager?)

Profile V&V Agent

- Should this function be integrated with the Profile Certifying Authority?

Requirements for new
simulation   systems

New
simulations/systems

Feedback on
simulations/systems

New profiles

Feedback on
profile accuracy

Profile standard

Profile
standard

Recommendations on
certification processes
and metrics

Feedback
on
profile
standard

Simulation/System Users

+ Provide feedback on usefulness and ease of
use simulations/systems
+ Identify new simulations/systems
requirements

Simulation/System Developers

+ Develop/integrate new simulations/ systems
consistent with existing profiles
- Identify the need for new profiles
+ Develop/integrate new simulations/systems
without an existing profile
+ Develop profiles for new simulations/systems
+ Provide feedback to Profile Community
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+ Provide feedback to Profile Certifying
Authority on accuracy of individual profiles

Profile Certifying Authority

+ Maintain repository and CM of approved
profiles
- Develop certification processes and metrics
+ Assess individual profiles according to the
profile standard, and certification processes
and metrics

Profile Community/Working Group

+ Develop profile standard
+ Update profile standard based on experience
of simulation/system developers
+ Make recommendations to Profile Certifying
Authority about certification processes and
metrics

Profile VV&A Agent

Profile Managers

+ Negotiate alignment of profiles where there
is a mismatch of nomenclature or functional
overlap
Identify missing capabilities

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Profiles should answer the following questions about the profiled technology:

What can I expect it to do?

- Functionally
- Constraints and comparisons

How do I physically integrate with it?

How do I semantically integrate with it?

How can I build another one?

How can I build a better one?

Need to determine both content and structure/format

Contents of profiles must support the profile definition

Contents of profiles must support the roles of the stakeholders

Since unambiguous interpretation is our first goal, focus on technologies that support automated methods

- Searching
- Composability
- Integration

Derived Technical Requirements

Provide unambiguous specification of the functionality of components, and interfaces among components of the framework

- WSDL
- Use formal specification technologies
  - UML
  - DoDAF

Ensure interoperability between existing and new web enabled technologies, both within M&S and in related domains

- Define XML schema for tagging standards (protocol, data, metadata) and other profiles
- Identify other interoperability technologies and standards
  - HLA
  - Defense Information Standards Repository (DISR) replaces the JTA

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Derived Technical Requirements

Provide the necessary metadata to facilitate composability and reuse of components across multiple M&S application domains

- Work with appropriate DoD namespace managers
- Should we define our own metadata tags to support searching?
  - As extensions to WSDL to support searching?
    - See XML Example slide
    - For HLA-compliant simulations, should we try to codify federation agreements?
  - See recommendations of data/metadata subgroup of CMSE workshop, 04S-SIW-050, and the RAND report
  - BPEL4WS

Facilitate development of new applications and services that are functionally interchangeable with existing applications and services

- WSDL

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Fall SIW Meeting

Day: Thursday, 23 September

Time: 0800 - 1500

Location: Manatee

Activities

- Assignment of other profile definitions for review
- Complete conops
- XMSF specific requirements
- Invited Presentations
  - UML examples
  - FEDEP overlay
  - Economics of M&S
  - Navy Schema

October 12-14, 2004

 Sheraton National Hotel, Arlington, VA

http://www.websim.net/Workshop_2.htm